Recent Results on Charmonia Production in the PHENIX Experiment at RHIC.

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Heavy flavor and charmonium production are predicted to provide a clear signature of the hot and dense partonic matter existing in the early stages of heavy ion collisions. In point like collisions, open charm and bottom observations serve as a test for QCD cross section calculations and help to provide a picture of the parton energy loss and the thermalization in the hot and dense matter formed in heavy ion collisions. The interpretation of charmonium signals in such collisions depends upon the final state interaction of these hard probes. On the other hand, p+A and d+A collisions allow evaluation of the cold nuclear matter effects that modify charmonium production in normal nuclei compared to that in $p+p$ collisions. We report the latest results on J/ψ production mechanisms in Cu+Cu and Au+Au at $\sqrt{s_{NN}}$ = 200 GeV in the PHENIX experiment at RHIC compared to baseline results from d+A and $p+p$ collisions.
We also report the first measurements of the contribution from excited charmonium resonances and B mesons to J/ψ production in $p+p$ collisions.